

WHAT IS CLAIMED IS:

- 1 1. A computer system using a queuing system for
- 2 managing a queue, said queuing system comprising:
- 3 a plurality of generic queue headers;
- 4 a plurality of links for connecting the generic queue
- 5 headers in a predetermined manner;
- 6 a plurality of data structures, each data structure
- 7 attached to one of the generic queue headers; and
- 8 a plurality of queue function calls for controlling
- 9 operations of the plurality of generic queue headers.

1 2. The queuing system of Claim 1, wherein each
2 generic queue header includes a pointer to a next generic
3 queue header, a pointer to a previous generic queue
4 header, and a pointer to the attached data structure.

1 3. The queuing system of Claim 2, wherein each
2 generic queue header includes a dynamic queue header.

1 4. The queuing system of Claim 2, wherein each
2 generic queue header includes a static queue header.

1 5. The queuing system of Claim 1, wherein the
2 plurality of queue function calls includes operations such
3 as insert, remove, search and remove, search and insert,
4 search only and peek.

1 6. The queuing system of Claim 1, wherein each link
2 connecting a pair of the generic queue headers is uni-
3 directional.

1 7. The queuing system of Claim 1, wherein each link
2 connecting a pair of the generic queue headers is bi-
3 directional.

1 8. The queuing system of Claim 1, wherein each data
2 structure includes a search key field, and one of the
3 generic queue function calls utilizes a search command to
4 scan each data structure attached to one of the generic
5 queue headers until the search command matches the search
6 key field and the operation of the one of the queue
7 function calls is performed.

1 9. The queuing system of Claim 1, wherein said
2 queuing system is used in an operating system or driver.

1 10. A queuing system used in an intelligent I₂O
2 driver of a computer system for managing a queue, said
3 queuing system comprising:

4 a plurality of queue headers;

5 a plurality of links for connecting the queue headers
6 in a predetermined manner;

7 a plurality of data structures, each data structure
8 attached to one of the queue headers; and

9 a plurality of queue action function calls for
10 controlling operations of the plurality of queue headers.

1 11. The queuing system of Claim 10, wherein each
2 queue header includes a pointer to a next queue header, a
3 pointer to a previous queue header and a pointer to the
4 attached data structure.

1 12. The queuing system of Claim 11, wherein each
2 queue header includes a dynamic queue header.

1 13. The queuing system of Claim 11, wherein each
2 queue header includes a static queue header.

1 14. The queuing system of Claim 10, wherein the
2 plurality of queue action function calls includes
3 operations such as insert, remove, search and remove,
4 search and insert, search only and peek.

1 15. The queuing system of Claim 10, wherein each
2 link connecting a pair of the queue headers is uni-
3 directional.

1 16. The queuing system of Claim 10, wherein each
2 link connecting a pair of the queue headers is bi-
3 directional.

1 17. The queuing system of Claim 10, wherein each
2 data structure includes a search key field, and one of the
3 queue action function calls utilizes a search command to
4 scan each data structure attached to one of the queue
5 headers until the search command matches the search key
6 field and the operation of the one of the queue function
7 calls is performed.

1 18. A method for managing a queue having a plurality
2 of queue headers within a computer system comprising the
3 steps of:

4 attaching a plurality of data structures to the
5 plurality of queue headers, where each data structure is
6 attached to one of the plurality of queue headers; and

7 controlling operations of the plurality of queue
8 headers utilizing one of a plurality of queue function
9 calls.

1 19. The method of Claim 18, wherein the step of
2 attaching includes the following steps:

3 configuring each data structure for a specific
4 transaction; and

5 allocating each configured data structure to one of
6 the queue headers including a dynamic queue header.

1 20. The method of Claim 18, wherein the step of
2 controlling includes inserting an additional data
3 structure onto one of the plurality of queue headers.

1 21. The method of Claim 19, wherein the step of
2 controlling includes removing one of the attached data
3 structures from one of the plurality of queue headers.

1 22. The method of Claim 18, wherein the step of
2 controlling includes searching the attached data
3 structures having a search key field using a search
4 command and removing the searched data structure
5 satisfying the search command.

1 23. The method of Claim 18, wherein the step of
2 controlling includes searching the attached data
3 structures having a search key field using a search
4 command and inserting an additional data structure onto
5 one of the plurality of queue headers.

1 24. The method of Claim 18, wherein the step of
2 controlling includes peeking in a predetermined order at
3 the attached data structures.

1 25. The method of Claim 18, wherein the step of
2 controlling includes searching the attached data
3 structures having a search key field using a search
4 command and reporting a location of the attached data
5 structure satisfying the search command.